



*Nurturing Potential | Inspiring Excellence*



# The Paradox of Giftedness and Autism

*Packet of Information for Professionals (PIP) – Revised (2008)*

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*This Packet of Information (PIP) was originally developed in 2007 for the Student Program Faculty and Professional Staff of the Belin-Blank Center for Gifted Education and Talent Development (B-BC). It has been revised and expanded to incorporate multiple forms of special gifted programs including academic year Saturday programs, which can be both enrichment or accelerative; non-residential summer programs; and residential summer programs.*

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*We acknowledge the Messengers of Healing Winds Foundation for its support in the creation of this information packet.*

*We acknowledge the students and families who participated in the Belin-Blank Center's Assessment and Counseling Clinic. Their patience with the B-BC staff and their dedication to the project was critical to the development of the recommendations that comprise this Packet of Information for Professionals.*



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## Purpose

This *Packet of Information for Professionals* (PIP) was developed for professionals who work with gifted and talented students who have an autism spectrum disorder (ASD).

In the past three years, the Belin-Blank Center's Assessment and Counseling Clinic has worked extensively with gifted students who have been diagnosed with an autism spectrum disorder (ASD), also known as twice-exceptional. Therefore, we are able to offer experience-based information and recommendations for administrators, educators, and residential staff of university-based programs.

The purpose of PIP is to offer recommendations that will lead to a positive experience for twice-exceptional students who participate in specialized programs for gifted/talented students. Because the purpose of PIP is not for use as a system for intervention, we think it is important to underscore the distinction between recommendation and intervention. An intervention is a level of involvement that is intense and multifaceted, and has change in student behavior as its primary goal. Our focus is on suggestions to professionals for accommodations so that a gifted child with ASD will have an optimum experience during their educational enrichment program. We hope that PIP will assist professionals in structuring an experience that is as successful and as rich as possible for gifted students with an ASD.

## Structure of PIP

Section I of PIP introduces general information related to both giftedness and autism spectrum disorders. This section is followed by Section II, which includes brief descriptions about students' academic and social development as they relate to being gifted and to having a diagnosis on the autism spectrum. These descriptions lead to the focus of PIP — recommendations for effectively accommodating the complex learning and social needs of students who are gifted and also have ASD.

The final section, Section III, includes appendices, resources, and an annotated bibliography. We hope that all professionals who receive PIP will use it as a resource and share it with their colleagues.

## To Educators and Professionals Involved with Twice-Exceptional Students:

It is exciting to be the director of the Belin-Blank Center where we have multiple programs for gifted students. Whether you are an educator, a residence hall advisor, a graduate assistant, or in training as a practicum student, the one thing we all have in common is that we get to work with some pretty outstanding kids.

Our programs bring together children and adolescents from a variety of geographic regions and backgrounds, but what they all have in common is exceptional potential and a desire to want more than they can get at their home school. They want to be with other kids who have similar values and abilities so that they can just “be themselves.” As you can imagine, parents also want their children to have such experiences.

For a gifted student with autism spectrum disorder (ASD), the option of experiencing a special program for gifted students may not be a possibility because ASD presents a number of challenges that may make such special experiences unrealistic. We want to change this so gifted students with ASD are encouraged to participate in university-based special gifted programs.



The Belin-Blank Center’s motto is “nurturing potential/inspiring excellence.” We don’t have qualifiers on this motto. It has always been our driving force to minimize barriers—whether economic, ethnic, gender, or geographic—that would interfere with bright students enjoying a quality, special gifted experience at Belin-Blank. Students with ASD have social and cognitive characteristics that can make being away from home for either a commuter or residential program quite challenging. It is our task to minimize these challenges (barriers).

The Belin-Blank Center has been focusing on comprehensive evaluations of gifted students with ASD. In partnership with the Messengers of Healing Winds Foundation, we have developed this revised Packet of Information for Professionals (PIP) to help program faculty and staff prepare and better understand the characteristics and needs of gifted students with ASD. Why? Simple. We want our gifted programs to be accessible to these young people. This can happen with your attention to and training with this PIP.

Through further testing and evaluation, our intent is to make PIP and training available to all gifted centers that offer special gifted programs. We want to minimize participation barriers everywhere. We will be saying “yes” to students who have not readily heard that word. And we all get to nurture and inspire.

Thank you.



A handwritten signature in black ink, appearing to read "Nicholas Colangelo".

Nicholas Colangelo, Director  
Belin-Blank Center

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*The gifted student who is also diagnosed with one of the autism spectrum disorders (ASD) has many behaviors, skills, and characteristics that are paradoxical in nature. In other words, there are aspects of these areas that are extraordinarily well developed—especially academically—yet, within the same broad area, there are other aspects that, relative to the academic strength, are significantly weak and may create a situation where the regular classroom setting may not be optimal for learning. Accommodations can be used to ensure that the student's learning experience is commensurate with his or her ability.*

## A Paradox of Strengths and Difficulties

### A Brief History of Gifted Education

For more than three decades, the federal definition of giftedness (see Appendix A) has served as the dominant basis for the definition of giftedness that is used in school settings in most states. This definition came from the first national report on gifted education, *Education of the Gifted and Talented*, which was a product of an effort initiated in 1972 by U.S. Commissioner of Education, S. P. Marland. The report, often referred to as the Marland Report, is credited with giving gifted education national stature by emphasizing the need for programming as well as by suggesting that a failure to meet the academic needs of gifted students would place them at risk for psychological damage. However, validation of gifted students' needs for specialized programming was the extent of the report's impact, because it did not include legislation leading to significant rights for gifted students, their parents, or their teachers.

Shortly after the release of the Marland Report, gifted education programs appeared throughout the nation's schools. Many of the programs were developed according to the Enrichment Triad Model (Renzulli, 1976), which is the core of Renzulli's Schoolwide Enrichment Model (SEM). Because an enrichment model aims to provide a comprehensive menu of challenging opportunities, it is understandably attractive to many educators who want to provide a broad spectrum of gifted-education opportunities to their students. In addition, most enrichment programs use an identification system that features above-average achievement (based on grade-level tests), creativity, and motivation. The first step to participation in an enrichment-focused program often is an evaluation of the student's performance on a nationally-normed, grade-level achievement test. The next step often involves the student taking a group-administered ability test, such as the Cognitive Abilities Test

(CogAT). See page 13 for a more comprehensive discussion of general cognitive ability.

Although an enrichment model is an effective intervention for many gifted students, ironically, for gifted students with a disability, the model's emphasis on above-average achievement and demonstrated motivation may inadvertently exclude from participation in the school's gifted program those gifted students who have learning difficulties or social-skill deficits.

An enrichment model also has resulted in a myth that giftedness is very general in its nature. Although we are not sure how this myth originated, even in the most respected school systems its impact is obvious by the global or general approach of gifted-student identification systems and subsequent programming. While scholars have demonstrated that most individuals are not equally talented in the variety of talent areas that are typically addressed in educational settings (e.g., verbal, quantitative, musical, and leadership; see the Marland Report definition of giftedness in Appendix A), schools continue to base entry into gifted education programs on global or composite standardized test scores.

Because of these practices, there is a denial of the enormous diversity of talent that exists among gifted students. For example, educators may assume that all gifted students love school, read well, process information quickly, or are able to complete work or learn new material independently. Professionals who adhere to this particular myth usually are not open to the possibility that a student can be gifted even though he/she does not process information quickly. These are often the same people who believe that gifted students do not require any special intervention because they will "make it on their own."

*Because twice-exceptional students are apt to be misunderstood, resulting in students who remain unidentified and, consequently, under-served, it is an acute necessity for professionals to be aware of the unique needs of these students.*

The description of enrichment programs begs the following question: Is the generally gifted approach the only way to find and develop programs for gifted students?

There is another system for gifted education programming that has existed since the early 1980s, when programs for high-ability students first were offered through university settings. Typically presented as a benefit of participation in university-based talent searches (Lupkowski-Shoplik, Benbow, Assouline, & Brody, 2003), these programs are almost entirely outside of the K-12 domain. The talent-search model for discovering academic talent is a two-step process, and the first step, as with an enrichment model, often emanates from the student's performance on a nationally-normed grade-level achievement test; however, this is the only point at which the talent-search programs resemble the enrichment programming. Therefore, enrichment usually serves as the basis for the majority of pull-out programs for gifted students in the K-12 setting and university-based programs (which are founded on a talent-search model) operate in a parallel gifted world. Because these two types of programs rarely intersect, it is not uncommon for students to qualify for university-based programs, yet not qualify for their school's gifted program.

### **What Model of Giftedness Do University-Based Programs Use?**

Many universities offer pre-college programming and most programs for pre-college students are grounded in the university-based talent search model. (See the Belin-Blank Center's Talent Search web page for more information about talent searches: <http://www.education.uiowa.edu/belinblank/talent-search/>.) As mentioned, one consequence of the parallel nature of the school-based enrichment programming and university-based talent-search programs is that students in university-based programs often are NOT identified for their school's gifted education programming. In fact, many of students who have been assessed through the Belin-Blank Center's Assessment and Counseling Clinic (see

Appendix C) have not been identified for their school's gifted education program. For many students—and especially for gifted students with a disability—attending a university-based program may be the first time that their high academic needs are being met.

In general, classes that are part of university-based programs are designed to enhance a specific content area, and students are encouraged to participate in classes that will develop their strengths. These classes should not be viewed as a way to remediate an academic area that is a weakness, indeed many of them are accelerative in nature (see *A Nation Deceived: How Schools Hold Back America's Brightest Students* by N. Colangelo, S. Assouline, and M.U.M. Gross, 2004, for a comprehensive discussion of academic acceleration). Students with a diagnosis on the autism spectrum who are participating in university-based programs can be (and have been) enrolled in any of the classes (e.g., writing, math, science, or visual arts).

### **What is an Autism Spectrum Disorder (ASD)?**

While only a small minority of gifted students are considered twice-exceptional, or possessing gifts/talents and a disability (e.g., Attention-Deficit/Hyperactivity Disorder (ADHD), learning disability, etc.), an even smaller portion are thought to be both gifted/talented and have a diagnosis on the autism spectrum. For this group of students, Bashe and Kirby (2001, p. 364–365) state that the “most pressing problem” is that “their emotional and behavioral challenges are considered ‘side effects’ of being unusually bright, rather than the manifestations of a neurological disorder.” This occurs even though autism is considered to have the best empirically based, cross-national set of criteria for diagnosis (Volkmar & Klin, 2005).

Students who are diagnosed with ASD have a developmental disorder that results in severe social, communication, and/or behavioral impairments. The criteria used to make diagnoses

that are considered on the autism spectrum are outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000); however, these criteria, and how ASDs are conceptualized in clinic and educational settings, are continuing to evolve. This evolution is relevant to the gifted child with co-existing ASD because of the risk of misdiagnosis due to the shifting definitions. The ASDs that are most commonly referenced among the medical and psychological community are Autism, Asperger Syndrome, and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). Only qualified professionals with appropriate training, such as psychologists or psychiatrists, can make a diagnosis of ASD. See Appendix B for the DSM-IV-TR diagnostic criteria used to diagnosis an ASD.

An ASD is one of the 13 disability categories (see Appendix A) identified by the Individuals with Disabilities Education Act (IDEA-2004). IDEA is a federal law that was first enacted in 1975. The purpose of IDEA is to assure a Free and Appropriate Public Education (FAPE) in the Least Restrictive Environment (LRE) to all students with disabilities. Because ASD is considered a disability, some educators do not consider that it is possible for a student to be both gifted and disabled.

### How Can Gifted Students Also Have a Diagnosis of an Autism Spectrum Disorder?

Giftedness and ASD are not mutually exclusive; they can and do co-exist. While there are no data that document the prevalence of gifted and talented children with ASD, there are many clinical cases as well as classroom anecdotes of this co-existence (e.g., Lovecky, 2004; Neihart, 2000; Webb, et al., 2005). Also, it has been noted (Gallagher & Gallagher, 2002) that in some individuals, symptoms of ASD can obscure giftedness; whereas in others, giftedness can mask characteristics of ASD. These two scenarios represent missed identification of giftedness or

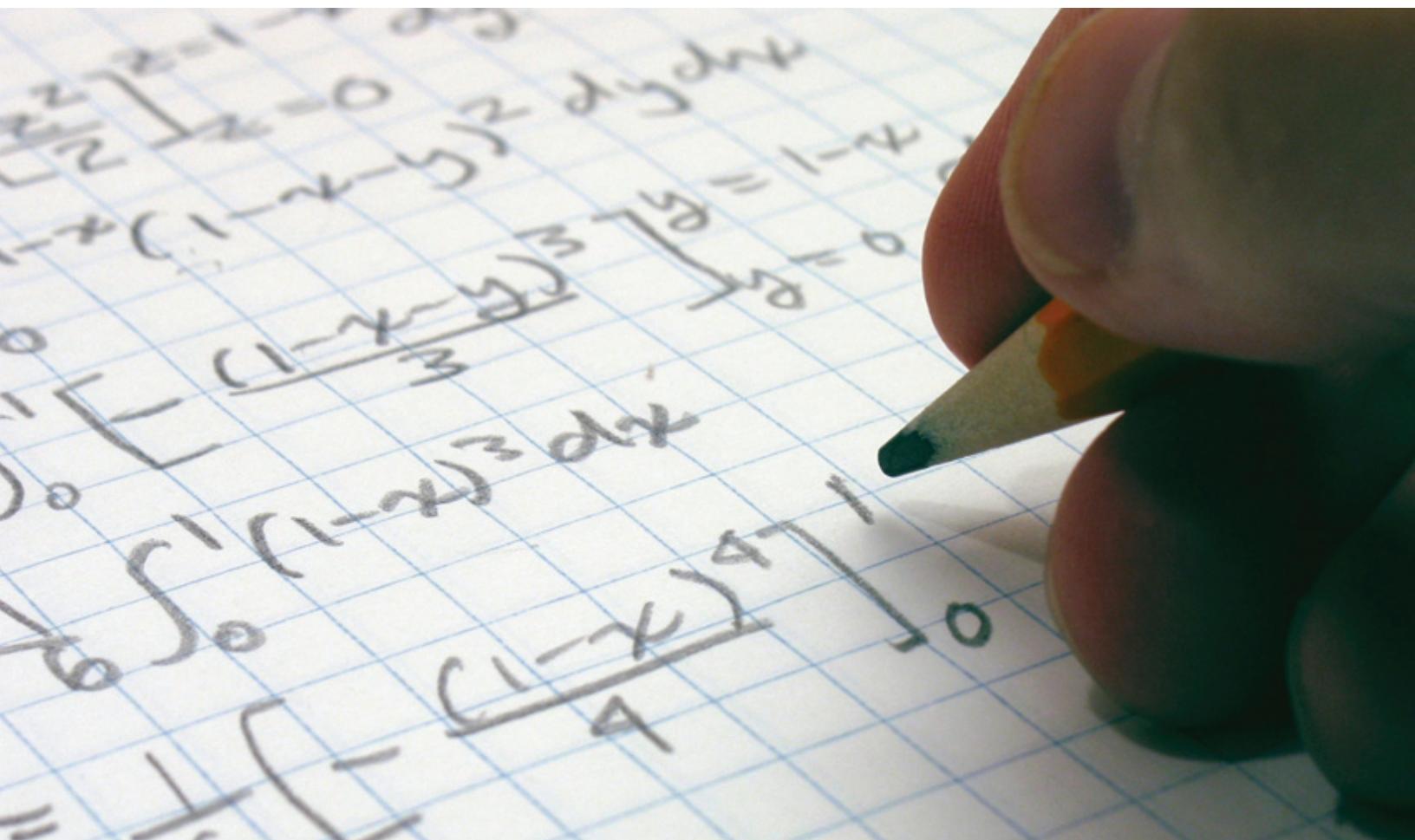
missed diagnosis of ASD. In other individuals, misdiagnosis occurs. That is, a gifted and talented student may display some behaviors (e.g., extreme interest in facts) that are characteristic of ASD, although upon completion of a comprehensive evaluation, it may be that the behaviors of concern are better explained by giftedness rather than ASD. In these cases, it is preferable to generate recommendations that address the student's difficulties in terms of how they interact with their gifts and talents. The reverse scenario would attribute characteristics typically associated with autism (e.g., socialization difficulties) to giftedness (e.g., a child demonstrates socialization problems because he/she does not have intellectual peers). This scenario is equally unfortunate because the student is not receiving appropriate interventions to address the disability related to the ASD.

Because twice-exceptional students are apt to be misunderstood, resulting in students who remain under-identified and, consequently, under-served, it is acutely necessary for professionals to be aware of the unique needs of these students.

### Why Is a Comprehensive Assessment Important?

Evaluation of gifts and talents, as well as ASD, is a complex process, and requires a comprehensive assessment that is tailored to the student's specific presenting issues. Only through such an evaluation can one identify the student's particular impairments and academic strengths. As well, an accurate diagnosis drives appropriate recommendations; therefore, from a psychological and educational perspective, it is critical to gather information from every area that could be affected by the student's ASD diagnosis. Specialized training in ASD assessment, as well as a thorough understanding of giftedness, is necessary.

Paul's intellectual functioning was extraordinary; in some areas, such as memory and factual knowledge, Paul obtained the highest score possible.


$$\begin{aligned} & \int_0^1 x^2 (1-x)^3 dx \\ &= \int_0^1 x^2 (1-x^3) dx \\ &= \int_0^1 x^2 - x^5 dx \\ &= \left[ x^3 - x^6 \right]_0^1 \\ &= 1 - 1 = 0 \end{aligned}$$

Paul is a 21-year-old college student, currently majoring in mathematics and computer science. His talent in math and the sciences was first noticed by a gifted education specialist in elementary school. However, because of low test scores in English and written language, Paul was not initially identified for his school's gifted program. Yet, his teacher knew that there was something special about Paul and wanted him to be recognized. She made special provisions for Paul to be accelerated in math and science class, which helped Paul identify himself as a bright student. He obtained scholarships to attend Belin-Blank Center summer programs three summers in a row, where he successfully participated in math and science classes—despite the lack of purposefully implemented accommodations.

Thanks to this gifted educator, who was a wonderful advocate for Paul, his academic needs were met throughout elementary, middle, and high school. However, as Paul advanced in school, it quickly became clear that his social and emotional needs were not. Paul had few to no friends and his ability to communicate socially with peers was limited. In fact, Paul was noticed to spend most of his free time reading nonfiction instead of interacting with others. Paul was unable to hold conversations unless the topic centered on one of his intense interests, such as computers. Many, including his parents, attributed his behavior to being gifted, saying that the absence of intellectual peers was what made him "different." Even though educators became increasingly concerned as Paul advanced through middle and high school, he was never formally assessed by a psychologist, who could have identified whether Paul's behaviors were simply an artifact of being extraordinarily bright—or were the manifestation of a disorder.

At the conclusion of his junior year, Paul elected to graduate early. His arrival at university was marked with amazement about both his academic strengths and his social and language weaknesses. Staff also noticed that Paul exhibited some unusual behaviors that set him apart from his peers, such as the way he dressed, his lack of eye contact or interest in others, his intense interests in computer games, and his strict adherence to routine. He was referred to a psychologist with expertise in both giftedness and disabilities, and he was given tests to assess both his strengths and areas for growth.

Results from this evaluation were striking. Paul's intellectual functioning was extraordinary; in some areas, such as memory and factual knowledge, Paul obtained the highest score possible. Other areas were more difficult for Paul, such as finding the similarities between seemingly independent concepts, or finding the missing details in pictures. Measures specially developed to identify ASD were also administered. These measures included a developmental interview, an interactive assessment, and a daily-living skills measure. Information obtained from these evaluations made it clear that Paul met diagnostic criteria for autism.

The diagnosis and what it meant in terms of Paul's functioning was shared with Paul and his parents so that provisions could be made to help make his transition to college a successful one. For example, individual counseling was initiated to provide social skills and communication training as well as organizational and time management skills, anxiety management, and career planning. Other staff members helped Paul with choosing classes, obtaining appropriate living quarters, and finding employment.

Paul's story exhibits the need for professionals, parents, and students to be aware of the strengths and areas for growth that exist for a gifted student with a diagnosis of ASD. Addressing students' gifts will not always help the disability, and addressing the disability will not always help the gifts. However, if the disability is not addressed, the gifts may never be fully developed—and if the academic gift is not addressed, it may generate anxiety that could exacerbate some of the unusual behaviors that are associated with ASD. Therefore, a multifaceted approach is necessary so that both strengths and areas for growth are identified and accommodations are put into place. Only through this approach will we, as professionals, appropriately meet the needs of gifted/talented students with ASD.

*In this section, we address multiple areas including general cognitive ability, reading, math, and written language, as well as cognitive processing speed and motor coordination. After each area is briefly described, we provide specific recommendations that support strengths and, when appropriate, minimize difficulties. Following the discussion about academically-related areas, we present extensive information about several areas that are usually associated with extreme difficulty for individuals who are diagnosed with an ASD. These include: socialization, communication, daily living skills, and behaviors and interests that may be unique and even unusual. Our recommendations for these non-academic areas are included in the general discussion of each.*

## Counterbalancing the Paradoxical Impact by Developing Strengths and Accommodating Difficulties

### General Cognitive Ability

The concept of general cognitive ability permeates gifted education. The evidence for this statement derives from the fact that general cognitive ability is the first item in the federal definition of giftedness (see Appendix A), and includes the observation that most gifted and talented programming involves some form of assessment of general cognitive ability. However, despite its ubiquitous nature, defining general cognitive ability is an elusive undertaking. Psychologists who specialize in measuring cognitive ability often associate the concept with skills that are essential to learning and solving problems. With that in mind, many of the measures used to assess general cognitive ability try to do so by having individuals respond to questions and complete tasks that measure how well they figure things out, especially as the task becomes increasingly complex. These tasks and questions make up IQ tests. The individual's performance on an IQ test is then compared to other individuals who are approximately the same age, and it is this comparison that helps educators understand what the student's strengths and weaknesses are as they relate to coursework.

Results from an IQ test can be reported in a variety of ways, including a score, a percentile ranking, or descriptively. Each way of reporting assumes a comparison with other students of the same age as the student being tested. Therefore, an IQ of 145 represents a score that is at the 99.9th percentile, and is described as "very superior." The 99.9th percentile means that out of 1000 students the same age, the student with an IQ of 145 scored as well as or better than 999 of those students! This is very remarkable and means a couple of things. First, many educators will often state that they teach lots of bright students and, indeed, they do. But, a student with an IQ of 145 is very rare and will be seldom challenged in a classroom that does not have advanced material. Second, a student with an IQ of 145

will still have relative strengths and weaknesses. However, a student with an IQ of 145 who is also diagnosed with an ASD will have some areas that are dramatically limited in comparison to his/her strengths. In these cases, what is most important about the information from an IQ test is not the overall score, *per se*, but the profile of scores from the subtests that comprise the entire instrument.

Some measures of general cognitive ability are developed for group administration, yet have the advantage of providing an individualized profile for the student. One such test is the Cognitive Abilities Test (CogAT). The most recent form, Form 6, was co-authored by David Lohman and Elizabeth Hagen (2001). As is clearly stated in their Interpretive Guide for Teachers and Counselors:

The test measures both general and specific reasoning abilities. The general reasoning abilities reflect the overall efficiency of cognitive processes and strategies that enable individuals to learn new tasks and solve problems, especially in the absence of direct instruction." (Lohman & Hagen, 2001, p. 1)

There are other measures of general cognitive ability that were developed for individualized administration. For most comprehensive evaluations that are conducted in a clinic, the individually administered IQ test is the best approach, as the information to be gained is extensive. The IQ test used most often by the Belin-Blank Center's Assessment and Counseling Clinic is the Wechsler Scales of Intelligence for Children, 4th Edition (WISC-IV). This instrument gives an indication of a student's verbal reasoning and problem-solving ability, perceptual reasoning ability, working memory ability, and processing speed. These are all areas that are crucial for learning and problem solving, and many gifted students who are diagnosed with an ASD have some unique characteristics within these areas that require attention.

## ***The Four Indices of the Wechsler Intelligence Scale for Children — 4th Edition (WISC-IV)***

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<b>Verbal Comprehension</b>	The subtests on this scale measure an individual's ability to use language and acquired knowledge effectively.
<b>Perceptual Reasoning</b>	The subtests on this scale measure ability to perceive logical relationships and to solve problems using novel information.
<b>Processing Speed</b>	The subtests on this scale measure an individual's ability to perform simple, visual-motor tasks speedily.
<b>Working Memory</b>	The subtests on this scale measure an individual's ability to hold information in his or her immediate awareness and use that information to repeat sequences in various ways.

### **Reading and Math**

Gifted students who have an ASD and have participated in the research sponsored by the Belin-Blank Center (see pages 26–28) have exceptionally high general cognitive ability—especially on the subtests that measure verbal comprehension and perceptual reasoning ability. Therefore, it is not unusual to observe that often they have high academic achievement, notably in reading and math. A description of these specific strengths as well as related recommendations for enhancing such strengths are presented below.

### **Reading**

For many students with ASD, word-reading skills are advanced in comparison to their comprehension skills. For the twice-exceptional students who we have tested, this pattern is similar; yet reading comprehension continues to be high. For example, many people thought that “Jane” was hyperlexic (i.e., could read words that were very difficult to pronounce, but could not understand the meaning) because she could read almost any word that was in front of her at an early age, but people questioned whether or not she could understand what she read. Once Jane was tested formally, it was discovered that her reading skills were still considered advanced for a student in her grade. This is not always the case. “Bill” read everything that he could get his hands on about dinosaurs. He was constantly using complex words in sentences that related to dinosaurs, and his eagerness for learning more was extreme. However, once Bill was tested, it was discovered that his reading comprehension skills were actually similar to grade-level expectations, especially when he was asked to make inferences and explanations about genres such as fiction or poetry.

## ★ **Recommendations to Enhance Reading Achievement and Enjoyment**

- Often, gifted students with ASD have intense interests in particular areas. Allow students to pick books and/or reading materials in their area of interest and engage them in conversations related to what they have read.
- Proficient readers with ASD may want to focus only on reading non-fiction books because of the more literal, factual nature of the material. For these students, encourage them to read more diverse genres in their areas of interest.
- Sometimes, abstract concepts can be difficult for the gifted student with ASD. Keep this in mind when suggesting reading material to the student in order to maintain his/her level of confidence in his/her ability to read.
- Many students with ASD are also relatively slow processors of information, and may not read as rapidly as one might expect. Or, if the student reads quickly, he/she may not be absorbing as much as he/she could if speed were not an emphasis. Therefore, focus on comprehension and enjoyment over speed to ensure that these pitfalls are not encountered.
- It is also important to note that some exceptional readers with ASD will do nothing but read, which does not bode well for developing skills in other academic areas and can serve to socially isolate the child even more. Therefore, it may be helpful to pair the gifted/ASD student with another student who has similar interests and assign them the same reading material. That way the student can work on social skills development while engaging in what he/she enjoys most.

## **Math**

Just as many educators assume that students with ASD have more advanced word-reading skills than reading comprehension skills, educators also may assume that students have advanced skills in math computation relative to their understanding of math concepts. This is not always the case and can lead to faulty programming, which is one reason why formal testing is so important. Often, when the results of testing are reviewed, it is discovered that the student's understanding of math concepts is advanced for his or her grade level.

## ★ **Recommendations to Enhance Math Success**

When students are highly able in mathematics, it is especially important to present advanced-level material. This is exactly the purpose of many student programs for gifted/talented students. Nevertheless, some students may need additional individualized attention because their skills are more developed than those of other students in the class.

- It is a rare occasion for instruction in a summer enrichment class to have much repetition of material. Nevertheless, for mathematically talented students with an ASD, there may be little patience for a review that covers material that the student already knows; therefore, sustaining the student's interest may be challenging if there is substantial review during a class session. Paradoxically, the student may be ready to grasp more complex material, yet might need a little more time than the other class members to process the new material. Thus, an effective way to accommodate these contradictory needs is to try to present new material but let the student take his/her time to process the information. In this way, challenging material is provided to all students, but the amount and exposure duration is individualized to meet each student's cognitive processing needs.
- Because students who are gifted in math and also have ASD may be likely to focus on a single aspect of math, it will be important to offer a broad perspective of math concepts throughout the course. Another way to think about this is to encourage students to explore various aspects of math outside their comfort zone.

## Cognitive Processing Speed and Multi-Tasking

Cognitive processing speed refers to the speed at which an individual can perceive and process incoming information. The ability to process information rapidly is essential to success in nearly all academic domains. For example, studies of reading comprehension show a strong connection between the speed at which one reads (i.e., an individual perceives the written word and registers that the word has been perceived) and the ability to comprehend what one has just read. In this case, processing speed is referring to the ability to quickly scan, recognize, and encode text into something meaningful. Unfortunately, many students who are diagnosed with ASD have deficits in processing speed that are in direct contrast to their extensive verbal ability. The paradox of very high verbal ability and weak perception and processing abilities can be extremely frustrating for both the student, who feels the pressure to complete tasks as quickly as peers, and for teachers, who must wait for the student to finish tasks before moving on with the other members of the class who have already finished.

Multi-tasking requires rapid cognitive processing; therefore, it is another area that can create frustration and lead to avoidance of the task altogether. For example, if students are nearing completion of a written activity and the teacher orally presents new directions to keep them moving along, the student diagnosed with ASD may have trouble processing the new directions while trying to complete the activity.

In our one-on-one and group work with gifted students with ASD, we have noticed several times that it is difficult for students to generalize what is learned outside of the classroom, group therapy, or individual therapy setting. Students' difficulty generalizing information can also be very frustrating for educators who teach material that the child seems to grasp, yet loses the ability to relate it to the next day's lesson. Repeating information, such as directions for an assignment, may not usually be necessary for typical gifted students, but it may be necessary to the success of these twice-exceptional students.

## ★ Recommendations for Accommodating Slower Cognitive Processing Speed

- Allow time in class for a student to think through his/her answer before responding.
- Important facts and deadlines should be written on the board.
- Allow students extended time to complete in-class tasks.
- Avoid timed tasks.
- Reduce assigned tasks that may have extraneous writing activities.
- Emphasize quality over quantity in assignments or activities.
- Encourage pre-planning, such as creating outlines, setting goals, and breaking the assignment into smaller units.
- Slow down lessons and reduce the amount of copying done in class or from a book.
- Verbally praise persistence on tasks.
- Use visual diagrams to enhance the lecture.
- Make available a copy of the teacher's outline prior to class.

## **Written-Language, Writing, and Fine-Motor Coordination**

Oral language skills are precursors to written language skills. In fact, strong language skills are among the reasons that many students with an ASD are not initially diagnosed with the disorder. Not only do they acquire oral language skills at an early age, these skills are typically exceptional in comparison to their same-age peers. Therefore, it would be natural to expect that students with strong oral language skills would be highly successful in the area of written language. However, the level of success often does not match the level that would be predicted from their earlier verbal development, which is typically very high. This is due to the fact that some areas of weakness, including both fine motor skills and cognitive processing interact to work as a double barrier to successful written language.

Fine-motor coordination is a skill that is often taken for granted, especially if there are no concerns. Yet, fine-motor coordination is vitally important to writing and drawing tasks, detailed lab work, or in using new tools like those used in science projects. In all of these areas, the interaction of fine-motor coordination and cognitive processing speed is vital to successful output.

Fine-motor difficulties for some students are manifested through poor quality handwriting and seemingly general carelessness, which may or may not be related to difficulty gripping a pencil or pen.

Students with ASD tend to have slow, labored, and unorganized writing. It can be frustrating for a teacher to observe that a highly verbal student with extensive knowledge about a specific subject area produces written work that is messy and may appear to be carelessly done. A few teachers perceive sloppy penmanship as a sign of carelessness and/or poor quality work. These problems, as previously mentioned, are the manifestation of the fine-motor difficulties combined with slower cognitive-processing speed, which are experienced by many students with ASD. Many times, students with ASD avoid writing altogether to avoid negative comments and/or feelings about inadequate work, which often can lead to frustration and embarrassment.

## **★ Recommendations to Accommodate Difficulties in Writing, Written Language, and Fine-Motor Coordination**

- Model or imitate the fine-motor activity—especially for very young students.
- Offer an assortment of different pens and pencils so students can find the one that's most comfortable.
- Allow use of print or cursive—whichever is most comfortable.
- Allow students to share notes, lessening the stress of rapid note taking.
- Provide copies of class notes.
- Use large graph paper for math calculations in order to help with number alignment.
- Allow the use of computers to complete writing assignments, and use assistive technology, such as voice-recognition software (e.g., Dragon Naturally Speaking) if the mechanical aspects of writing are too difficult.
- If a student's writing is slow or labored, allow extra time to complete assignments.
- Have students tape-record their response first and then produce written output based on their recording.
- Intersperse required writing assignments with writing activities that allow the student to write about their special interests.
- Encourage the idea of writing drafts and proofreading so that students can focus on the content first and the mechanics second.

## **Gross-Motor Skills**

In addition to fine-motor difficulties, many individuals with ASD also exhibit weaknesses with gross-motor skills (i.e., simple movements of the large-muscle groups). While such skills can range greatly in children who are diagnosed with ASD, it is not unusual to see children with ASD involved in accidents, such as knocking things over and bumping into other people, more regularly than their peers who do not have ASD.

It is also common for children with ASD to walk and run with an ungraceful appearance, often characterized by a lack of arm swing and impaired balance. Children with ASD and who are awkward may be teased and embarrassed, creating a reluctance to participate in sports or physical activities involving running and jumping. This is also true of sports and activities that require throwing and catching, as children with ASD frequently struggle with throwing accuracy and timing necessary for catching. This is particularly unfortunate considering that most popular sports usually involve these skills. It should also be noted that while some children tend to learn imitation of movement rather quickly, children with ASD are less likely to be able to imitate others' movement patterns. Thus, it can be especially frustrating for a teacher, coach, or residential assistant to teach such a child through demonstration of physical movements (e.g., modeling how to kick a soccer ball).

- ★ The main recommendation for concerns about gross-motor deficits relates to the professional's need to be sensitive to the student's feelings when in group settings by not placing him/her in situations that may result in embarrassment. For example, if the child is having difficulty with a particular gross-motor skill or activity, do not ask him/her to perform that skill in front of peers.

## **Characteristics and Behaviors of Students with an Autism Spectrum Disorder (ASD)**

Most special programs for gifted/talented students share the goal of providing challenging academics in a supportive learning and social environment. Indeed, a strong social aspect is a major component of most summer enrichment programs, especially the residential programs. For many students, participation in a residential program is often the first opportunity to spend five or more nights away from home. With this in mind, it is of the utmost importance for professionals to be informed about the nature of ASD and the social difficulties that may arise. Such information is necessary to prevent both inappropriate expectations of performance based on the student's cognitive abilities and misinterpretation of the student's behavior as deliberate or malevolent.

There are many characteristics that are associated with ASD, and the specific criteria necessary for diagnosis are listed in Appendix B. Following is a sampling of related characteristics (see Attwood, 2007; Silverman & Weinfeld, 2007) that you may (or may not) observe in summer program participants. Please note that the characteristics are not an exhaustive listing; rather, they provide an example of what may be observed in gifted/talented students with ASD. Following the descriptions are recommendations that might be useful when/if a student demonstrates any of these emotional and behavioral presentations in or out of the classroom.

*Many students with ASD lack important social skills that would not only help them make and keep friends but would also have a positive effect on their academic progress.*

## Social Characteristics

For all gifted/talented students with ASD, social awareness is an area that requires special attention. It is important to note that, whereas many students with ASD are self-described “loners,” they may feel an intense desire to make friends and have a more active social life, yet they lack the skills necessary to make these desires a reality. Other social difficulties may also be observed, such as:

- Social behavior that seems developmentally immature;
- Difficulty reading social cues, such as how to adjust one’s behavior depending on the situation;
- A perceived lack of empathy or emotional interest in others (e.g., no reaction to a person’s misfortune or fortune);
- Difficulty forming friendships with classmates;
- Trouble accepting and offering feedback;
- Lack of ability to censor comments. For example, the student may vocalize his/her views about the physical qualities of a teacher without realizing that his/her comments may hurt the teacher’s feelings;
- Difficulty understanding the need for personal space;
- Raised voice during periods of stress and/or frustration;
- Trouble understanding and/or following the rules of social games during free time.

In your professional role, you will be in a position not necessarily to improve a student’s social skills but rather to assist them in decreasing social stressors and increasing positive social interactions. For example, it may be helpful to arrange for the student to sit near a group of students at lunch and during free time so that opportunities to cultivate social interactions are present. Offer encouragement and recognition for all attempts made at engaging others socially.

In many cases, the student with ASD may need specific instructions as to how to relate to other students. This means that a general comment such as, “Why don’t you go sit next to Marcos today at lunch?” is not as helpful as a comment such as, “After you get your tray at lunch, go sit in the chair next to Marcos and see if he wants to talk about this morning’s class.”

It is also important to identify specific opportunities in which the student can interact with peers. In these situations, the student can observe and learn from the language and social skills of those around him or her. It may be helpful to match the student with peers who have similar interests to give him/her “common ground” on which to build a friendship. What is nice about summer enrichment programs is that students typically self-select courses they take; therefore, classes will be filled with students who have similar interests, giving the student with ASD opportunities to talk and make friendships with like-minded peers.

Many students with ASD lack important social skills that would not only help them make and keep friends but would also have a positive effect on their academic progress. Listening skills are vital in the classroom as well as in social situations, but may be a challenge for students who get caught up in their own interests to the extent that they may have trouble focusing on others or the material being presented in class. If this happens in your classroom, it may be helpful for you and the student to develop a cue that you and the student could use (e.g., an agreed-upon word or signal) to regain the student’s focus.

## ★ Recommendations for Enhancing Social Skills

As an educator, we encourage you to cultivate students’ social awareness at every opportunity—inside and outside the classroom. In situations that are socially problematic for the gifted/talented student with ASD, you may find that there is a discrepancy between the student’s perceptions about a situation and the perceptions of others. These differences need to be made explicit for the student so that he/she can learn from these situations and attempt to apply new skills in the future.

## Language and Communication Characteristics

Gifted students with ASD often possess communication styles that set them apart from their peers. Some examples of what you may observe include:

- Trouble applying social rules in conversation, such as what topics to select, changing topics, or providing background to help the unfamiliar listener;
- Having a hard time using and understanding facial and other nonverbal expressions that communicate emotion, or understanding how non-literal forms of communication, like teasing, irony, sarcasm, or humor, are used;
- Little to no conversational participation in group discussion or excessive talk that seems off topic or devoid of others' perspectives;
- Rarely reciprocating pleasant comments or greetings (e.g., fail to respond when you say, "It is great to see you this morning!");
- Being literal in the interpretation of instructions given by the teacher (i.e., unable to "read between the lines");
- Using a pedantic conversational style ("The Little Professor").

*As an educator, it is important to remember that you will not be in a position to change the student's style of communicating within the week or two the student is on campus. However, you can set up a positive environment where the student will feel accepted and heard.*

## ★ Recommendations for Addressing Language and Communication Difficulties

It is important to remember that you will not be in a position to change the student's style of communicating within a week or two. However, you can set up a positive environment where the student will feel accepted and heard.

For example, it may be helpful to let the student know when he/she is talking about a topic with which you are not familiar and that you will need more background to be better able to converse. Or, the student could be paired with a peer who has a similar interest so that they can share past-times and experiences. Sometimes, students may also need prompting to remember that what may be an interesting or relevant topic to them may not be to the listener.

It is important to realize that the student likely will not respond like his/her peers to gentle teasing and humor. Because these students have often been the subject of bullying, it will be vital to monitor peer interactions to ensure that bullying is not occurring and that the student is not in a situation where his/her communication style is being used against him/her. It would also be helpful to point out to the student situations in which gentle teasing and humor are being used so that misunderstanding does not occur.

When a student takes a risk and contributes to group discussion, praise the student for his/her efforts. Conversely, when a student seems to be monopolizing group discussion, inform the student prior to the start that it will be important for you to hear all students' perspectives so you will be calling on multiple students to contribute. When providing instructions to students, use a straightforward and direct style. Ensure that students understand what is expected of them by having them repeat back what was said.

## **Behavioral Characteristics**

There are several behavioral characteristics that are associated with a diagnosis of ASD. Some of which could include, but are not limited to:

- Failure to decipher private versus public habits or to engage in personal hygiene needs (e.g., the student who picks his/her nose or does not take showers);
- Absence of relaxation or recreational activities;
- Limited or unusual clothing preferences;
- Intense sensory sensitivities (touch, sound, light, color, odor, taste);
- Self-stimulatory actions, often to reduce anxiety, stress, or express pleasure;
- Self-injurious behaviors when frustrated;
- Sleep disturbance;
- Easily distractible;
- Strict adherence to rules and routines (unable to finish one task before starting another one; trouble with change);
- Trouble understanding the importance of details depending on the situation;
- Difficulty understanding when a task is actually “finished”;
- Anger or behavioral problems related to unexpected changes in routine or behavior.

## **★ Recommendations for Supporting Behavioral Difficulties**

Educators as well as support staff may find that some students with ASD exhibit behaviors that can be problematic in and out of the classroom. Several behavioral management techniques may be of assistance, depending on the particular student and his/her specific needs. Typically, the emergence of a behavior problem is a signal that the student is experiencing stress. If so, consider removing the student from the source of the stress and allowing him/her to go to a place where he/she feels at ease. If available, involve staff with expertise in behavior management to identify in advance locations that can serve such a purpose.

When possible, it may be helpful to have a comforting object or person available to help calm the student, or to engage the student in a familiar and enjoyable activity. If there is a strong possibility that this option is likely to be needed, it would be important to identify ahead of time, the process and procedures for implementation.

You may also find that a gifted student with ASD may experience behavioral difficulties during “down times.” To avoid problems during these occasions, plan ahead to find out what activities and areas the student is interested in and be prepared to make specific suggestions about things the student should do. This might include playing cards, reading a book, listening to music with headphones, or playing on a computer.

There may be cases where a child’s behavior seems to require specific, program-wide guidelines to deal with the issues whenever they arise. If you feel that a behavioral intervention plan would be helpful to you, we recommend that you let the administrative staff know very early in the program so that an individualized plan can be developed. Whatever guidelines are determined should be discussed with the student in an explicit, rule-governed fashion, and everyone involved with the student should be aware of the plan so that consistency across staff, settings, and situations is maintained.

Many students with ASD have such intense interests that they may result in social and communication problems. However, these interests can be used in a positive way. For example, an interest can be used to grab attention in particular subject areas. If a student is fascinated with baseball statistics, use this interest to teach him/her about fractions and decimals or find books that feature baseball players with impressive statistics.

Many students with ASD also have an adverse reaction to change; thus, starting a special gifted program can be extremely stressful to the student. Students would benefit from having a written schedule where each component of the day is outlined. Once a routine is established, he or she may become anxious if it is changed or if the setting is altered. It is imperative to let the student know ahead of time of changes that are likely to cause distress (e.g., a changed field trip, shortened break time, etc.). In all likelihood, the student will take longer to adjust to any changes than it would take his/her peers, so discuss the transition with him/her before informing the whole group, and be patient if he/she does not understand right away.

### **Residential Summer Programs: A Special Setting**

Parents of each student who participates in residential summer programs are required to complete health forms. These forms are the ideal place for parents or guardians to identify environmental factors that are likely to cause their child distress. A careful review of the forms will be helpful in taking steps to minimize or eliminate these issues before the program begins. For example, the student may be sensitive to certain sounds that he/she is likely to hear during the program; therefore, this student may benefit from wearing headphones during individual work time to eliminate possible distractions that are part of the surroundings. Other students may be sensitive to fluorescent lights, so placing the student near a window, if available, may help.

### **Common Misunderstandings about ASD**

Although much more common than originally thought, autism is a relatively rare disorder (about 1 in 150 children). This is especially true when one considers that nearly thirteen times as many children are diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) and children are three times more likely to have an Obsessive Compulsive Disorder than autism. This is, perhaps, why autism is often misunderstood and stereotypes are prevalent. In fact, there is no cognitive, social, and behavioral profile that fits all children with ASD. Misperceptions about individuals with ASD, such as beliefs that most children with an ASD are nonverbal, simply are not true. Some other misperceptions are as follows:

#### **MISUNDERSTANDING: Individuals with ASD do not desire social interactions or interpersonal relationships.**

In actuality, many students with ASD have a strong desire to meet new people and make new friends. Unfortunately, they often lack the necessary knowledge and skills to do so. Most programs offer ways for students to form relationships with like-minded peers. Helping gifted students with ASD identify others with common interests and reinforcing prosocial behaviors are ways in which they can develop positive relationships during their program.

#### **MISUNDERSTANDING: Individuals with ASD have savant skills (rare, special skills in a restricted area).**

The movie *Rainman*, which starred Dustin Hoffman as a man with autism and savant skills, helped create this stereotype. While some of the students attending special programs indeed will have exceptional ability and skills, in fact, only about 10% of individuals with ASD have savant syndrome.

### **MISUNDERSTANDING: Individuals with ASD do not have or express emotions.**

While it is true that many individuals with ASD have difficulty interpreting the facial expressions and affective signals of others, they typically have and express emotions. Unfortunately, deficits in regulating (i.e., monitoring and adapting) emotions sometimes leads to incongruent expression of emotions, over-expression of emotions, and, most commonly, a more narrow expressive range of emotions. For example, a child with ASD may be perceived as behaving poorly or oddly after he/she giggles during a time of distress. Failure to reciprocate a smile or a scowl should not be taken as a sign that the student does not feel anything; rather, it is more likely that the child has either misread your facial expression or poorly regulated his/her own emotions.

### **MISUNDERSTANDING: Students with ASD lack imagination and creativity.**

Temple Grandin, a professor of animal science at Colorado State University is but one example of an individual with autism who has amazing creativity. She is known around the world as one of the most creative designers of humane slaughterhouses for livestock. Students with ASD may have extraordinary imaginations and high creativity, but reflect it in a different and sometimes odd manner. That is, they could show their creativity through developing fantasy worlds or creating a new language.

### **MISUNDERSTANDING: All students with ASD have stereotyped behaviors, such as hand-flapping or body rocking.**

Stereotypic movements are a feature of several clinical disorders, including autism. However, higher-functioning individuals with ASD, especially those who are cognitively advanced, are less likely to exhibit such behaviors. And stereotyped behaviors that are exhibited tend to be more restrained or covert. Nonetheless, you may encounter a student in summer programs with a stereotyped behavior, such as hand flapping. While these behaviors are generally thought to be automatically reinforced (i.e., self-stimulatory), they may bring about unwanted attention to the child. Therefore, signals or cues to the child that he/she is engaging in an overt stereotyped behavior may prevent embarrassment or teasing by others. Otherwise, these behaviors tend to be harmless.

### **MISUNDERSTANDING: Individuals with ASD do not go to college.**

An increasing number of individuals with ASD are attending college. Many of the adolescent and high school students we have assessed at the Belin-Blank Center have expressed an interest in college and some have already applied and been accepted. Some colleges even have special programs designed specifically for students with ASD (e.g., Marshall University). Many of the twice-exceptional students involved in summer programs for gifted students will have the skills and ability necessary to complete college independently, while others are likely to need some support.

*In fact, there is no cognitive, social, and behavioral profile that fits all children with ASD. Misperceptions about individuals with ASD, such as beliefs that most children with an ASD are nonverbal, simply are not true.*

## Common Questions and Helpful Answers

### How do I know if problem behaviors are a symptom of autism? When is it just misbehavior?

This is a difficult question that does not have a simple answer. The more familiar you become with the autism diagnosis, as well as individual characteristics of a particular student with ASD, the easier it is to know whether a student is truly misbehaving or is exhibiting a “symptom” of ASD. Students with Asperger Syndrome tend to be blunt, lack flexible thinking, and exhibit a higher degree of egocentrism, making such decisions difficult. For example, during a social skills group here at the Belin-Blank Center two children with Asperger Syndrome were discussing their favorite video games. When one boy indicated that he did not have a particular game that had just been released, the other boy remarked in a neutral tone of voice, “You don’t have it because your family is poor.” While this may seem like an obvious attempt to insult the boy without the video game, in actuality the boy had heard his parents say previously that “They (video game makers) make it impossible for poor people to purchase video games” and he assumed that is why others did not have the game he did.

This is an excellent example of how the basic, logical thinking skills of many students with ASD can be misinterpreted by those who are not familiar with the characteristics associated with the disorder. Behaviors such as the one in the above example should be carefully analyzed before jumping to a conclusion that it is simply “bad” behavior. It is those behaviors which are clearly inappropriate, such as physical aggression, name calling, and stealing, that should be treated as such.

### What do I tell students in the class when a gifted student with ASD is given “special treatment”?

There are likely to be occasions when a student with ASD is allowed to behave in a manner in which other students are not. Teachers with a gifted student with ASD in class must maintain balance between the needs of the class versus the needs and/or the safety of the individual student. In many cases, teachers may not need to address the incongruent treatment. For example, if a student with ASD has a difficult time keeping his/her shoes on in a non-science class (which some children with sensory issues may do), others in the class may not observe this behavior or may not care that one student is engaging in this behavior. However, some behaviors tend to be disruptive and cause other students to become frustrated or angry, oftentimes creating an undesirable learning environment.

As another example, a student with ASD who constantly blurts out answers in class while other students are raising their hands may upset students who would like the chance to express themselves. In such cases, rather than embarrassing the student with ASD in front of his or her peers, teachers should wait until the next classroom break and talk with the student about his or her behavior. It is important to explain why you have concerns (e.g., other students do not like it when they do not have a chance to speak), create explicit rules or instructions for the student (e.g., the student must raise his/her hand before speaking), and provide clear consequences (e.g., if you raise your hand then the teacher will be more likely to call on you; however, if you do not raise your hand then you will not be allowed to speak out in class).

Finally, on some occasions, it may be beneficial to pull specific students aside and explain to him or her why a peer is receiving “different” (not “special”) treatment without disclosing that the student has ASD. For example, if a student regularly complains that a peer with ASD is allowed to take short breaks due to overstimulation in the classroom, teachers may choose to pull the

student aside and explain that their classmate has difficulty with all the action in the classroom and needs these breaks to help him/her learn.

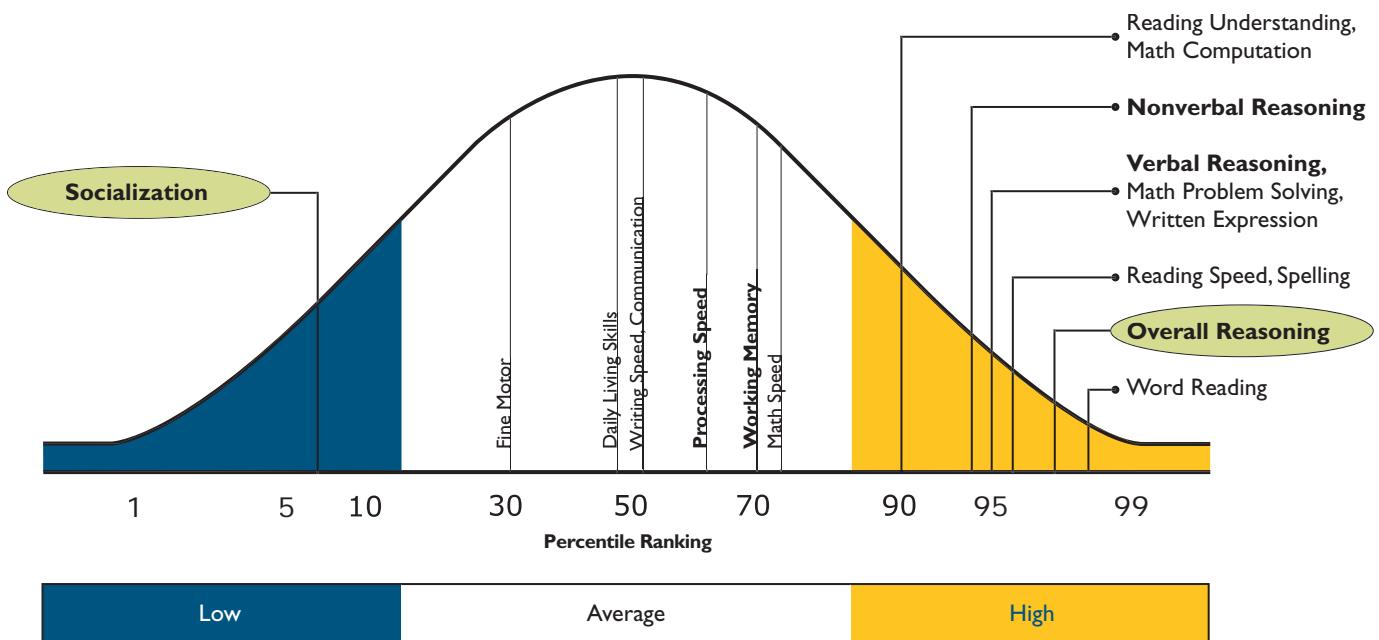
### **How should I manage teasing or bullying by other students?**

Teasing, which is less aggressive in nature than bullying, is an inevitable problem among kids, regardless of whether the target has ASD. The key is to provide a safe environment where all children feel comfortable to be themselves. As suggested, bullying is sometimes considered to involve more aggressive words and behaviors. While teasing and bullying may be difficult to prevent, a few steps can be taken to decrease the likelihood of either occurring. First, provide clear behavioral expectations of all students, including explicit rules against teasing and bullying and consequences for engaging in such behavior. Make sure that all students know the rules and be ready to fully implement the stated consequences. At the same time, acknowledge and praise prosocial behaviors, such as cooperative play and pleasant exchanges – even a simple pat on the back can motivate a student to continue to help and interact appropriately with others. It is also important to be sensitive to situations where teasing is more likely to occur. For example, if there is a student in your class who has poor motor skills, playing a game of kickball may be more likely to leave this child vulnerable to teasing than an activity such as a board game.

While teasing is hard to prevent, when it does occur it should be dealt with immediately because the longer it goes on the more likely it is to get worse. It is a good idea to ask all students to report to a staff member (i.e., resident advisor, classroom teacher, program administrator) any occurrence of teasing or bullying. Based upon the individual case, consequences may involve simply working out an agreement between two students or, for more serious occasions, removing the student engaging in teasing/bullying. Incidents of physical aggression and/or intimidation are grounds for immediate dismissal from summer programs.

### **What should I do when a student has a behavioral “meltdown”?**

*Oftentimes a “meltdown” is the student’s way of communicating emotions such as frustration, anger, or stress. For many students with ASD it is also an indicator that they need to be left alone or to “get away.” Reasoning with any student engaged in a tantrum is not likely to result in him or her calming down; nor will punishment-based consequences (e.g., verbal reprimands, sitting in the corner), which are more likely to escalate the situation. The best alternative is to allow the student to take a break to visit the “quiet place” (e.g., a room or space with comfort items that has been designated for students with ASD who need to decompress). If the student does not respond to this offer, if available, consult with a professional who can assist with meeting the student’s specific needs.*



### A Graphic Description of Research Used to Support Our Recommendations

Drs. Foley Nicpon and Assouline (in press) have summarized the results of an extensive research study involving the comprehensive assessments of 18 gifted/talented students diagnosed with ASD. Of the 18 students with ASD, 14 were in elementary school, two in middle school, and 2 in high school; their ages ranged from 6–17. As previously stated, a comprehensive evaluation is required for accurate diagnosis of both gifts and disabilities. Therefore, all 18 participants were administered a battery of tests that were designed to identify areas of academic and cognitive strength, identify social-emotional needs, as well as confirm or rule out a diagnosis of ASD.

The Wechsler Intelligence Scale for Children–Fourth Edition (WISC-IV; Wechsler, 2003) was used to measure the students' intellectual ability. Specifically, we determined each student's General Ability Index (GAI), which is derived from the Verbal Comprehension Index (VCI) and the Perceptual Reasoning Index (PRI). The GAI allows the psychologist to estimate the child's general level of ability without the effects of working memory or processing speed

on performance. The average GAI for our 18 gifted/talented students with ASD was in the 97th percentile. Such a high percentile ranking is very rare, and fewer than 3% of age-matched students have such outstanding overall verbal and nonverbal abilities.

Because the GAI is comprised of the VCI and PRI, it is not surprising that these two index scores were also outstanding; the VCI average score was in the 95th percentile, and the PRI average score was in the 94th percentile. (Please note that it is an artifact of the statistical procedures used to compute the scores that results in a GAI score that is actually higher than either the VCI or the PRI.) Thus, in our sample, participants' overall verbal and nonverbal skills were quite advanced in comparison to what would be considered "normal" or "average" for age-matched students. Conversely, participants' scores on the Processing Speed Index (PSI), which measures how quickly a student can process information, was in the 63rd percentile, which is considered average in comparison to age-mates. Similarly, participants' average scores on the Working Memory Index (WMI), which measures a student's short-term memory, were again considered average (70th percentile).

Whereas it is typical for gifted students to have lower scores for the Processing Speed and Working Memory Indices (Sparrow, Pfeiffer, & Newman, 2005), the degree to which the scores from our sample differ from the Verbal Comprehension and Perceptual Reasoning Indices is not typical. Thus, for the gifted/talented child with ASD, it appears to take relatively longer for him/her to process information, and long-term auditory memory is overall stronger than short-term auditory memory. These large score discrepancies also help explain why educators, parents, and students become easily frustrated by the fact that some cognitive tasks are quite easy to learn, while others are significantly harder.

Several achievement tests were administered to determine the students' overall levels of academic achievement. These measures included tests of reading, mathematics, and written language. In our sample, students demonstrated outstanding word-reading skills (98th percentile), reading speed (96th percentile), and reading comprehension skills (90th percentile) in comparison to other students in their grade. While many students with ASD are thought to have advanced ability to decode words (the skill measured by Letter-Word Identification on the Woodcock Johnson III (WJ III) with more average-range reading comprehension (Grigorenko, et. al., 2002; O'Connor & Hermelin, 1994), this was not the case for our sample, because reading for understanding was also quite advanced.

Overall math performance was indicative of strong computation (90th percentile) and problem-solving skills (95th percentile). Students' ability to complete simple math facts quickly was more similar to the performance of the average student for their grade (73rd percentile). This means that some gifted/talented students with ASD may not be able to demonstrate their true math knowledge under timed circumstances because their difficulties (completing basic math quickly) would mask their talents (completing advanced math effectively).

A similar pattern unfolded on the written language tests. Here, the ability to quickly compose sentences was grade-appropriate (50th percentile), but spelling and creative writing and composition skills were advanced (96th and 95th percentiles, respectively). For many of the students with fine-motor skill difficulties, accommodations, such as dictation, were employed, which seemed to help performance. Surprisingly, however, because it has been documented that many students with ASD struggle with fine-motor skills (sometimes referred to as dysgraphia) (Rogers, Cook, & Meryl, 2005), only 29% of our students produced scores on a separate fine-motor test that were outside of what would be considered average for their age. Nevertheless, for the majority of students, fine-motor skills were well behind most of their other academic skills and abilities, creating a discrepancy that can be potentially frustrating for the educator and the student. Thus, written language appears to be another academic area where high abilities can be masked if a disability is not identified and accommodated.

To gain a sense of the students' daily functioning, the Vineland Adaptive Behavior Scales, Second Edition (Sparrow, Balla, & Cicchetti, 2005) was administered. The Vineland – II, which examines communication, daily living, interpersonal, and motor skills, is used in a variety of medically- and psychologically-based settings to aid in the clinical diagnosis of various disorders, including ASD, for which it is important to know how symptoms affect a student's everyday life. For the students in our sample, average scores on the Communication scale, which measures expressive, receptive, and written language skills, were considered age-typical (50th percentile), as were average scores on the Daily Living Skills scale, which measures personal, domestic, and community skills (47th percentile). Most notable was that for all 18 participants, scores on the Socialization domain were substantially lower (the average for the group was in the 6th percentile). This pattern of performance on the Vineland –II is, however, typical for students diagnosed with ASD. That is, when there is such a notable comparative discrepancy between Socialization (very low) and Communication and Daily Living

Skills (average), this discrepancy alone is a strong predictor of ASD (Gillham, Carter, Volkmar & Sparrow, 2000).

The above figure provides a visual display of students' abilities, and emphasizes the significant differences in the cognitive, academic and adaptive functioning skills of these gifted/talented students with ASD.

## Conclusion to Sections I and II

Section I of PIP offered an extensive discussion of giftedness and autism spectrum disorders (ASD). Section I concluded with a case study that was included to help the reader feel connected to the real people who are the motivation for PIP.

In Section II, we tried to describe the unique learning and behavioral characteristics of gifted students who are diagnosed with an ASD. Section II concluded with the graphic representation of the research upon which the recommendations were based. We emphasized the recommendations for academic and social accommodations by a .

Section III includes the appendices, an extensive list of resources, and an annotated bibliography. We hope that you will find the final section to be as informative as Sections I and II.

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**Definition of Giftedness****Disability Categories of IDEA****Explanation of Federal Protections for Students with Disabilities****504 Plans****Individualized Education Plans (IEPs)****Marland Report (1972)  
Definition of Giftedness**

Gifted and talented children are those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. These are children who require differential educational programs and/or services beyond those provided by the regular school program in order to realize their contribution to self and the society.

Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:

1. General intellectual ability
2. Specific academic aptitude
3. Creative or productive thinking
4. Leadership ability
5. Visual and performing arts
6. Psychomotor ability\*

It can be assumed that utilization of these criteria for identification of the gifted and talented will encompass a minimum of 3% to 5% of the school population.

*\*This was later removed.*

**The Thirteen IDEA  
Disability Categories**

- Autism (A required category for reporting beginning in 1992)
- Deaf/Blindness
- Emotional Disturbance
- Hearing Impairment
- Mental Retardation
- Multiple Disabilities
- Orthopedic Impairment
- Other Health Impairment
- Specific Learning Disability
- Speech or language Impairment
- Traumatic Brain Injury
- Visual Impairment
- Developmental Delay

## Explanation of Federal Protections for Students with Disabilities

Professionals who work with individuals who are diagnosed with ASD typically have clinical responsibilities (i.e., they are licensed psychologists or psychiatrists who make the diagnosis) or are educators who must address both cognitive and social-emotional needs of the student. In addressing these needs, there are two types of legal protections (Individualized Educational Programs, IEP; and 504 Plans) for individuals with disabilities, including the disability category of autism. An IEP and a 504 signify different applications in an educational setting; however, each set of protections serves as a bridge between the clinical diagnosis and the educational program.

### **Explanation of Individualized Educational Programs (IEPs)**

The IEP specifies for each individual the explicit disability-related needs and the way in which the educational setting must meet the needs. The IEP is a formal acknowledgment that the student's diagnosis results in an individualized need to establish the program of instruction, which includes goals and objectives that are evaluated annually to determine the effectiveness of the plan.

The plan is written and must be agreed upon by parents. There is some federal funding for services offered to children with an identified disability. An IEP is created in response to the legal requirements of the Individuals with Disabilities Education Act, 2004, and focuses on a written plan detailing intervention strategies for the student.

### **Explanation of a 504 Plan**

A 504 Plan refers to a section of the Americans with Disabilities Act (1990) that prohibits discrimination against individuals based upon his or her disabilities. It offers protections in a school setting that are similar in nature to protections provided by Section 504 of the Vocational Rehabilitation Act of 1973. A 504 Plan is much less precise than an IEP. If a student has an IEP, it will supersede the 504.

In essence, the 504 specifies the accommodations that are needed to ensure that the student has access to an appropriate education. These are accommodations that may structure the environment or the mode of instruction to assure that the student has an optimal learning experience. The suggestions that were presented in Section II are more typically found in 504 Plans.

Finally, the 504 Plan does not require a written plan that is agreed to by parents. As well, 504 Plans do not include funding for the services.

## Diagnostic Criteria for Autism Spectrum Disorders (ASD)

As listed in the DSM-IV, the diagnostic criteria for autistic disorder are as follows:

1. Qualitative impairment in social interactions, which could include difficulty using nonverbal behaviors, such as gesturing, during social interactions; failure to develop peer relationships at his/her developmental level; lack of spontaneously seeking to share enjoyment, interest, or achievements with others; and/or lack of social and/or emotional give and take in a relationship.
2. Qualitative impairments in communication, which could include delay in spoken language; difficulty initiating or sustaining a conversation; repetitive or idiosyncratic use of language; and/or lack of varied, spontaneous play or social imitative play that would be expected given the student's developmental level.
3. Restricted, repetitive and stereotyped patterns of behaviors, interests or activities, which could include encompassing preoccupations that are abnormal in their intensity or focus; inflexible adherence to nonfunctional routines or rituals; motor mannerisms, such as hand or finger flapping or twisting; and/or a preoccupation with the parts of objects.

These delays cause significant impairment in social, occupational, or other areas of functioning, and the delays in social interactions, social communication, or imaginative play need to have occurred prior to age three.

The DSM-IV-TR criteria for Asperger's Disorder, also referred to as Asperger Syndrome, are very similar:

1. Qualitative impairment in social interactions, which could include difficulty using nonverbal behaviors, such as gesturing, during social interactions; failure to develop peer relationships at his/her developmental level; lack of spontaneously seeking to share enjoyment, interest, or achievements with others; and/or lack of social and/or emotional give and take in a relationship.
2. Restricted, repetitive and stereotyped patterns of behaviors, interests or activities, which could include encompassing preoccupations that are abnormal in their intensity or focus; inflexible adherence to nonfunctional routines or rituals; motor mannerisms, such as hand or finger flapping or twisting; and/or a preoccupation with the parts of objects.

Again, the delays cause significant impairment in social, occupational, or other areas of functioning; however, there is no general delay in language, cognitive development, adaptive behavior (with the exception of social delays), or curiosity about the environment in childhood. ***It is important to note that Asperger's Disorder is not diagnosed if criteria are met for autism.*** Further distinctions are outlined in the DSM-IV-TR. For example, it is more common to witness an all-encompassing circumscribed interest in a student with Asperger Syndrome than it is to see stereotyped motor mannerisms, preoccupation with the parts of objects, rituals, and/or distress with changes in

the environment — these are more common in students with autism. Additionally, students with autism are more likely to be socially isolated or rigid in their social interactions than are those with Asperger Syndrome, who are typically motivated to talk to others but in a one-sided, verbose, and egocentric manner.

There are many students who have communication and social delays, as well as stereotyped behaviors and restricted interests, but who do not meet full diagnostic criteria for autism because the difficulties were not observed prior to age three. Other students may exhibit characteristics within each category but not to a level that a diagnosis of autism would be appropriate. For these children, Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS) is the diagnostic term that is most appropriate, according to the DSM-IV-TR.

Currently, the assessment protocol for a gifted student who visits the Belin-Blank Center ACC in order to rule-out ASD is as follows:

## Minimum Requirements

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- Cognitive Ability Measure
- Achievement Measure
- Psychosocial Screening Measures
- Developmental Measures of ASD characteristics
- Adaptive Behavior Measure
- Fine-Motor Measure

## Other Possible Assessment Tools

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- Memory Measure(s)
- Executive Functioning Measure(s)
- Specific Psychosocial Measures (depression, anxiety screeners)
- Auditory Processing Measure(s)
- Language Measure(s)

## The Belin-Blank Center's Assessment and Counseling Clinic

The Assessment and Counseling Clinic (ACC) is dedicated to providing clinical services to gifted and talented students, their families, and school personnel. These services include, but are not limited to, identification of ability levels, determination of psychological and educational needs, assistance with adjustment and emotional difficulties, and outreach and consultation services.

The ACC is staffed by highly trained professionals with experience in working with gifted individuals from various backgrounds and a wide variety of concerns. The entire staff works in collaboration with Belin-Blank Center Director, Nicholas Colangelo, Ph.D., and Associate Director, Susan Assouline, Ph.D, both well-known experts in the field of gifted education. Megan Foley Nicpon, Ph.D., Supervisor of Psychological Services, and Claire Whiteman, Ph.D., serve as the ACC's licensed psychologists. The ACC staff also includes advanced-level doctoral graduate students and advanced practicum students in the School Psychology and Counseling Psychology programs.

Although the ACC has established itself as a leader in assessment and counseling for gifted individuals, more recently the ACC has developed a one-of-a-kind focus on services for and research with twice-exceptional students (i.e., gifted students who have a co-existing disability). Of particular importance are a variety of services available to students who are both intellectually gifted and have some form of autism spectrum disorder (ASD):

- **Assessment.** In addition to the ACC's psychoeducational assessments to determine levels of ability and educational achievement, Drs. Assouline and Foley Nicpon have completed extensive training in the use of the ADI-R and ADOS, which are autism spectrum diagnostic instruments considered the "gold-standard" in the field. Additional assessment in the areas of social-emotional development and

behavior also help to round out the assessment process, which culminates in a written report with interpretation of the assessment results and individualized recommendations to improve the student's social, psychological, and educational well-being.

- **Group Counseling.** Doctoral-level counseling and school psychology students who are supervised by Dr. Foley Nicpon facilitate group counseling sessions for gifted students with ASD who fall into specific age ranges. These sessions are primarily focused on developing social skills and relationships. We have applied for grant funding to determine whether we will be offering ongoing groups starting Fall 08.
- **Consultation.** The ACC offers consultation to students and their families on a variety of topics; some examples include acceleration planning, decision-making for college, and second opinions regarding diagnosis.
- **Research.** The Belin-Blank Center, in partnership with the Iowa Department of Education, was awarded a competitive federal Jacob K. Javits grant to study twice-exceptional students, including gifted students with ASD. This research is focused on establishing best practices for discovering twice-exceptional students and providing evidence-based recommendations that are relevant in schools. We also have submitted a grant to obtain funding to initiate social skills groups starting Fall 08.

The ACC accepts Blue Cross/Blue Shield, Midland's Choice, and United Behavioral Health Insurance. Qualified individuals and families may be eligible for a sliding fee scale and/or payment plan. To learn more about the clinic, please visit our website at: <http://www.education.uiowa.edu/belinblank/clinic>.

## APPENDIX D

### Web Sites for People Who Work with Individuals with an Autism Spectrum Disorder (ASD)

#### For General Information on AS/HFA

##### <http://info.med.yale.edu/chldstdy/autism/index.html>

This is the Yale Developmental Disabilities Clinic/The Yale Child Study Center webpage, which offers information on AS/HFA and current research being conducted, as well as links to other informational websites.

##### <http://www.autism.org>

This is the homepage for The Center for the Study of Autism (CSA), an organization that provides information about autism to parents and professionals, and conducts research on the efficacy of various therapeutic interventions.

##### <http://www.maapservices.org>

This is the homepage for MAAP Services for Autism and Asperger Syndrome, a nonprofit organization dedicated to providing information and advice to families of individuals with some form of autism. This site includes a great information section on autism and Asperger syndrome.

##### <http://www.aspergersyndrome.org>

This is the website for the Online Asperger Syndrome Information & Support (OASIS). Founded by the mother of an AS child, this website has a wealth of information regarding AS. The site is comprehensive and includes information on recent research, upcoming conferences, legal resources, and a lot more.

##### <http://www.colour-se7en.co.uk/tips.htm>

This site includes wonderful tips for persons working with individuals with AS/HFA, as well as information to better understand the mind of the AS/HFA individual.

##### <http://www.autism-society.org>

This is the website of the Autism Society of America, which is aimed at promoting opportunities for persons with autism spectrum disorders and their families.

##### [www.autismspeaks.org](http://www.autismspeaks.org)

Autism Speaks is an organization dedicated to autism awareness and research. This website includes general information on autism, as well as a description of recent research on autism, and a calendar of public awareness and fundraising events.

##### <http://www.asatonline.org/>

The Association for Science in Autism Treatment is a non-profit organization of parents and professionals committed to improving the education, treatment, and care of people with autism. This site includes information on autism, its causes, and scientifically-validated treatments for autism.

##### <http://www.aspennj.org/>

This is the homepage for the Asperger Syndrome Education Network (ASPEN), a nonprofit group dedicated to providing education, support and advocacy to those affected by autism. This site includes descriptions of Asperger's disorder and other ASDs, as well as recommends books and articles.

#### Specifically for Individuals With AS/HFA/HFA

##### <http://www.wrongplanet.net/>

Wrong Planet provides an online community and resources for those with Asperger Syndrome.

##### [http://www.udel.edu/bkirby/asperger/teens\\_reflection.html](http://www.udel.edu/bkirby/asperger/teens_reflection.html)

On this page an AS teen shares his thoughts on Asperger Syndrome.

##### <http://www.aspergia.com/>

This is an interesting site developed by an individual with Asperger Syndrome. It provides a different perspective on Asperger Syndrome.

##### <http://www.angelfire.com/amiga/aut>

##### <http://www.freewebs.com/assupportgroup>

Personal websites of individuals with AS, including biographies and discussions of important aspects of life with AS.

## What is Asperger Syndrome/ High Functioning Autism?

Freeman, B. J., Cronin, P., & Candela, P. (2002).

Asperger syndrome or autistic disorder? The diagnostic dilemma. *Focus on Autism and Other Developmental Disabilities*, 17(3), 145–151.

The purpose of the present article is to provide a brief overview of the diagnostic concept of AS and to help clinicians with diagnostic decisions. The authors state that regardless of the diagnostic category, a significant number of children and adults with social communication learning disability require intervention.

Gillberg, C. (1998). Asperger syndrome and high-functioning autism. *British Journal of Psychiatry*, 172 Mar, 200–209.

This paper reviews the history of Asperger syndrome (AS) and high-functioning autism (HFA), current diagnostic concepts and criteria, some controversial diagnostic issues, epidemiology, background factors, outcome, and intervention guidelines.

Khouzam, H. R., El-Gabalawi, F., Pirwani, N., & Priest, F. (2004). Asperger's disorder: A review of its diagnosis and treatment. *Comprehensive Psychiatry*, 45(3), 184–191.

Although the etiology of Asperger's disorder is still undetermined, this article will review the assessment and treatment interventions that could improve the prognosis of this illness. The historical background, epidemiology, diagnostic features, differential diagnosis, and course and overall management/treatment of Asperger's disorder will be discussed.

Myles, B. S., Barnhill, G. P., Hagiwara, T., Griswold,

D. E., & Simpson, R. L. (2001). A synthesis of studies on the intellectual, academic, social, emotional and sensory characteristics of children and youth with asperger syndrome. *Education & Training in Mental Retardation & Developmental Disabilities*, 36(3), 304–311.

A synthesis of studies designed to better understand characteristics of children and youth identified as having Asperger syndrome is provided. Based on work associated with The Asperger Syndrome Research Project, summarized information on the unique intellectual, academic, social/emotional, and sensory characteristics of children and youth with Asperger syndrome is presented. Implications and practitioner information related to these findings is also included.

Myles, B. S., & Simpson, R. L. (2002). Asperger syndrome: An overview of characteristics. *Focus on Autism and Other Developmental Disabilities*, 17(3), 132–137.

This article describes the characteristics of students with Asperger syndrome and the syndrome's impact in the home, school, and community. Specific characteristics addressed include social, behavioral, emotional, cognitive, academic, and sensory. These characteristics are noted as germane to educators and can be used as a basis for planning appropriate programs for students with Asperger syndrome. DSM-IV-TR diagnostic criteria for Asperger syndrome is appended.

Neihart, M. (2000). Gifted children with Asperger's syndrome. *Gifted Child Quarterly*, 44(4), 222–230.

The author proposes that gifted children with Asperger's Syndrome may not be identified because their unusual behaviors may be wrongly attributed to either their giftedness or to a learning disability. This article discusses ways in which Asperger's Syndrome might be missed in gifted children and proposes guidelines for differentiating characteristics of giftedness from characteristics of Asperger's Syndrome.

Portway, S., & Johnson, B. (2003). Asperger syndrome and the children who 'don't quite fit in'. *Early Child Development and Care*, 173(4), 435–443.

This paper discusses some of the early findings of current work exploring the lives of young adults with Asperger syndrome and their parents. The focus here is the experience of 'growing up' as perceived by people with Asperger syndrome. Twenty-five families were purposively sampled and informal interviews conducted with young adults with Asperger syndrome and their parents. They went through school and moved into adulthood feeling and being treated as 'different'; with nobody seemingly understanding why. Many were excluded educationally, in that some were expelled from school while others were excluded by their peers within school. All the participants expressed views that likened them to living on the edge of society where they felt extremely isolated and vulnerable to mental health problems.

## Social Skills/ Social-Communication Issues

Attwood, T. (2000). Strategies for improving the social integration of children with Asperger syndrome. *Autism*, 4(1), 85–100.

There is general agreement that children with Asperger syndrome have difficulties in social integration with their peers. Our current understanding of the nature of these difficulties is explained in this article and specific strategies are described that are designed to encourage greater competence in the skills that are necessary to achieve effective social integration.

Bellon-Harn, M. L., & Harn, W. E. (2006). Profiles of social communicative competence in middle school children with Asperger syndrome: Two case studies. *Child Language Teaching & Therapy*, 22(1), 1–26.

Among characteristics of children diagnosed with Asperger syndrome (AS) are difficulties in social communication. This study describes the social communicative competence of two middle school children with AS participating in conversations in three different situational contexts.

Carrington, S., Templeton, E., & Papinczak, T. (2003). Adolescents with asperger syndrome and perceptions of friendship. *Focus on Autism and Other Developmental Disabilities*, 18(4), 211–218.

This qualitative study investigated the perceptions of friendship faced by teenagers diagnosed with Asperger syndrome. This research aimed to provide teachers with an insight into the social world of Asperger syndrome from a student perspective.

Church, C., Alisanski, S., & Amanullah, S. (2000). The social, behavioral, and academic experiences of children with asperger syndrome. *Focus on Autism and Other Developmental Disabilities*, 15(1), 12–20.

Describes social, academic, and behavioral experiences in 40 3–15 yr olds with Asperger syndrome through retrospective medical chart review. Charts were qualitatively analyzed for parent comments and observations, physician descriptors, observed child behaviors and interactions, and teacher reports.

Greenway, C. (2000). Autism and Asperger syndrome: Strategies to promote prosocial behaviours. *Educational Psychology in Practice*, 16(4), 469–486.

This paper surveys literature for social skills screening instruments and interventions, which have relevance to the work of the educational psychologist in supporting inclusion in the mainstream setting.

Howard, B., Cohn, E., & Orsmond, G. I. (2006). *Understanding and negotiating friendships. Autism*, 10(6), 619–627.

This case study explored perceptions of friendship of an adolescent with Asperger syndrome. Data were collected through semi-structured interviews, photographs taken by the adolescent, and quality of life and friendship measures

Jones, R. S. P., & Meldal, T. O. (2001). Social relationships and Asperger's syndrome. *Journal of Learning Disabilities*, 35(1), 35–41.

This article examined personal accounts of individuals with Asperger's syndrome concerning their difficulties with social relationships. Five websites generated and maintained by individuals with Asperger's syndrome were analyzed for common themes. Results show the themes of communication and comprehension difficulties, desire for relationships, and attempts to fit into mainstream society.

Little, L. (2001). Peer victimization of children with Asperger spectrum disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(9), 995–996.

Describes a study on the prevalence of peer shunning and peer victimization of children with Asperger's disorder (ASP) and children with nonverbal learning disorders (NLDs).

Rubin, E., & Lennon, L. (2004). Challenges in social communication in Asperger syndrome and high-functioning autism. *Topics in Language Disorders*, 24(4), 271–285.

This article begins with a review of social communication challenges that are common to both of these disorders (asperger syndrome and high-functioning autism), and a discussion of challenges that are more specific to children and adolescents with either Asperger syndrome or high-functioning autism follows.

## Academic/Cognitive Issues: Cognition

Barnhill, G., Hagiwara, T., Myles, B. S., & Simpson, R. L. (2000). Asperger syndrome: A study of the cognitive profiles of 37 children and adolescents. *Focus on Autism and Other Developmental Disabilities*, 15(3), 146–153.

This article examined the cognitive profiles of individuals with Asperger's syndrome to determine if there is a characteristic profile that might aid diagnosis and the development of interventions. Results suggest that salient factors associated with the diagnosis of Asperger syndrome may not be found in the cognitive profile but in other behavioral or academic characteristics.

Bowler, D. M., Gardiner, J. M., & Berthollier, N. (2004). Source memory in adolescents and adults with asperger's syndrome. *Journal of Autism and Developmental Disorders*, 34(5), 533–542.

This article describes how memory difficulties in autism are observed mainly on measures like free recall, where test procedures provide no support for memory.

Channon, S., Charman, T., Heap, J., Crawford, S., & Rios, P. (2001). Real-life-type problem-solving in Asperger's syndrome. *Journal of Autism and Developmental Disorders*, 31(5), 461–469.

Describes a study comparing individuals with Asperger's syndrome and typically developing individuals on a novel problem-solving task. The Asperger's group was impaired in several aspects of problem-solving, including recounting the pertinent facts, generating possible high-quality problem solutions, and selecting optimal and preferred solutions. This group's solutions differed most from those of the typically developing group in social appropriateness. The contributions of social experience, social understanding, and executive skills to performance on the novel problem.

Ehlers, S., Nyden, A., Gillberg, C., & Dahlgren Sandberg, A. (1997). Asperger syndrome, autism and attention disorders: A comparative study of the cognitive profiles of 120 children. *Journal of Child Psychology and Psychiatry, 38*(2), 207–17.

Applied the Swedish version of the Wechsler Intelligence Scale for Children—Revised (WISC—R) to 40 children with Asperger syndrome, 40 children with autistic disorder/childhood autism, and 40 children with deficits in attention, motor control, and perception (all Ss aged 5–15 yrs). Results suggest that Kaufman's Verbal Comprehension, Perceptual Organization and Freedom from Distractibility factors rather than verbal or performance IQ account for the variance on the WISC—R. Furthermore, the Asperger syndrome and autistic disorder groups differed in respect to “fluid” and “crystallized” cognitive ability.

Ghaziuddin, M., & Mountain-Kimchi, K. (2004). Defining the intellectual profile of Asperger syndrome: Comparison with high-functioning autism. *Journal of Autism and Developmental Disorders, 34*(3), 279–284.

Asperger syndrome (AS) is a disorder of early childhood characterized by autistic social deficits, subtle communication impairment, and excessive isolated interests. There is no history of language delay or of mental retardation. Despite its increasing popularity as a distinct condition, its diagnostic validity remains uncertain.

Hill, E. L., & Bird, C. M. (2006). Executive processes in Asperger syndrome: Patterns of performance in a multiple case series. *Neuropsychologia, 44*(14), 2822–2835.

This study provides evidence for significant executive dysfunction in Asperger syndrome. Greatest dysfunction appeared in response initiation and intentionality at the highest level—the ability to engage and disengage actions in the service of overarching goals.

Kenworthy, L. E., Black, D. O., Wallace, G. L., Ahluvalia, T., Wagner, A. E., & Sirian, L. M. (2005). Disorganization: The forgotten executive dysfunction in high-functioning autism (HFA) spectrum disorders. *Developmental Neuropsychology, 28*(3), 809–827.

Executive function (EF) abilities were investigated in 72 children with high-functioning autism (HFA) spectrum disorders through the collection of parent ratings and performance on laboratory measures of EF. In addition, discrepancy analysis was used to isolate executive functioning on tasks that carry multiple demands. Comparison of HFA and Asperger Disorder (AD) groups did not reveal consistent differences in EF. Results did indicate global EF deficits in the combined group of children with HFA and AD. Within the EF domain, specific deficits in flexibility and organization were most prominent.

Scheuffgen, K., Happé, F., Anderson, M., & Frith, U. (2000). High “intelligence,” low “IQ”? Speed of processing and measured IQ in children with autism. *Development and Psychopathology, 12*(1), 83–90.

The uneven profile of performance on standard assessments of intelligence and the high incidence of savant skills have prompted interest in the nature of intelligence in autism. The present paper reports the 1st group study of speed of processing in children with autism (IQ 1 SD below average) using an inspection time (IT) task. These findings have implications for the role of general and specific cognitive systems in knowledge and skill acquisition: far from showing that children with autism are unimpaired, the authors suggest that their data may show the vital role of social insight in the development of manifest “intelligence.”

## General Academic

Church, C., Alisanski, S., & Amanullah, S. (2000). The social, behavioral, and academic experiences of children with Asperger syndrome. *Focus on Autism and Other Developmental Disabilities*, 15(1), 12–20.

Describes social, academic, and behavioral experiences in 40 3–15-yr-olds with Asperger syndrome through retrospective medical chart review. Charts were qualitatively analyzed for parent comments and observations, physician descriptors, observed child behaviors and interactions, and teacher reports. The study illustrates both the variability and the consistency of the characteristics of this disorder over time and during specific developmental stages. The results indicate that social skill deficits were variable but remained the greatest challenge for these intellectually bright and verbal children. Critical areas for intervention are highlighted.

Griswold, D. E., Barnhill, G. P., Myles, B. S., Hagiwara, T., & Simpson, R. L. (2002). Asperger syndrome and academic achievement. *Focus on Autism and Other Developmental Disabilities*, 17(2), 94–102.

This study focused on identifying the academic characteristics of children and youth who have Asperger syndrome (AS). Significant numbers of school-age children have AS, yet little is known about the unique educational features of individuals with this pervasive developmental disorder. The study revealed the academic achievement, problem-solving, and critical thinking traits of school-age children and youth who have AS. Results are discussed in the context of their implications for identifying and developing educational plans and strategies.

Jordan, R. (2005). Managing autism and Asperger's syndrome in current educational provision. *Pediatric Rehabilitation*, 8(2), 104–112.

There is a need to understand the difficulties faced by those with autistic spectrum disorders (ASD) in educational settings if one is to manage and help them manage their learning. This paper explores some of the most pertinent problems that arise. It analyses perceptual, social, conceptual, emotional and memorizing barriers to learning and shows how difficulties in communication are exacerbated by educational language, which gives a poor model for those who have no prior understanding of inter-personal communication. It is the understanding of ASD that enables the teacher to correctly identify the child's learning needs and begin to meet them.

Safran, S. P., Safran, J. S., & Ellis, K. (2003). Intervention ABCs for children with Asperger syndrome. *Topics in Language Disorders*, 23(2), 154–165.

The number of children identified with Asperger syndrome (AS) is rapidly rising throughout the world. The purpose of this article is to promote understanding of the characteristics and behaviors associated with AS and to introduce a range of school-based interventions.

Tsatsanis, K. D. (2004). Heterogeneity in learning style in Asperger syndrome and high-functioning autism. *Topics in Language Disorders*, 24(4), 260–270.

Although children and adolescents with high-functioning autism and Asperger syndrome present with some similar clinical features and challenges, heterogeneity of learning style coupled with the predominance of specific “packages” of materials and methods tends to underestimate the need for individualization when designing an educational and/or a therapeutic program.

Williams, K. (1995). Understanding the student with Asperger syndrome: Guidelines for teachers. *Focus on Autistic Behavior*, 10(2), 9–16.

Describes 7 defining characteristics of Asperger syndrome (AS) and suggests strategies for developing behavioral and academic interventions within the classroom context. These characteristics include: insistence on sameness, impairment in social interaction, restricted range of interests, poor concentration and motor coordination, academic difficulties, and emotional vulnerability.

Tsatsanis, K. D. (2004). Heterogeneity in learning style in Asperger syndrome and high-functioning autism. *Topics in Language Disorders*, 24(4), 260–270.

Although children and adolescents with high-functioning autism and Asperger syndrome present with some similar clinical features and challenges, heterogeneity of learning style coupled with the predominance of specific “packages” of materials and methods tends to underestimate the need for individualization when designing an educational and/or a therapeutic program.

Williams, K. (1995). Understanding the student with Asperger syndrome: *Guidelines for teachers*. *Focus on Autistic Behavior*, 10(2), 9–16.

Describes 7 defining characteristics of Asperger syndrome (AS) and suggests strategies for developing behavioral and academic interventions within the classroom context. These characteristics include: insistence on sameness, impairment in social interaction, restricted range of interests, poor concentration and motor coordination, academic difficulties, and emotional vulnerability.

## Reading

Myles, B. S., Hilgenfeld, T. D., Barnhill, G. P., Griswold, D. E., Hagiwara, T., & Simpson, R. L. (2002). Analysis of reading skills in individuals with Asperger syndrome. *Focus on Autistic Behavior*, 17(1), 44–47.

Examined the reading performance of children and adolescents with Asperger syndrome (AS). Results show that subjects' reading levels for silent reading and independent reading were lower than their actual grade levels. However, reading levels concerning instructional reading, frustration, and listening capacity levels were commensurate with their grade levels. Subjects correctly answered a higher percentage of factual and literal questions than inference questions.

O'Connor, I. M., & Klein, P. D. (2004). Exploration of strategies for facilitating the reading comprehension of high-functioning students with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 34(2), 115–127.

Many students with autism spectrum disorders show good decoding combined with poor comprehension. Twenty adolescent students with autism spectrum disorders participated in a study concerning the effects of three kinds of facilitation on reading comprehension. Instructional implications for text preparation, remedial instruction, and the design of educational software are discussed.

## Writing

Myles, B. S., Huggins, A., Rome-Lake, M., Hagiwara, T., Barnhill, G. P., & Griswold, D. E. (2003). *Written language profile of children and youth with Asperger syndrome: From research to practice. Education and Training in Developmental Disabilities*, 38(4), 362–369.

The current study investigated written language skills of children and youth with Asperger Syndrome (AS). Sixteen children and youth with AS and 16 neurotypical peers were compared on a standardized test of written language skills and legibility of handwriting. Implications for translating research to practice in teaching writing skills for children and youth with AS are discussed.

## Gross Motor Skills

Ghaziuddin, M., & Butler, E. (1998). Clumsiness in autism and Asperger syndrome: A further report. *Journal of Intellectual Disability Research*, 42(1), 43–48.

Compared clumsiness in 12 children with Asperger's syndrome (AS), 12 children with autistic disorder, and 12 children with pervasive developmental disorder not otherwise specified (PDD-NOS). While coordination deficits were found in all 3 groups, subjects with AS were less impaired than subjects with autistic disorder or PDD-NOS. However, no significant relationship was found between coordination scores and diagnosis after adjusting for the level of intelligence. These findings suggest that some patients with AS may be less clumsy than those with autistic disorder and that this difference may be the result of their higher level of intelligence.

Green, D., Baird, G., Barnett, A. L., Henderson, L., Huber, J., & Henderson, S. E. (2002). The severity and nature of motor impairment in Asperger's syndrome: A comparison with specific developmental disorder of motor function. *Journal of Child Psychology and Psychiatry*, 43(5), 655–668.

The aims of this study were to measure objectively the extent and severity of motor impairment in children with Asperger's syndrome (AS) and to determine whether the motor difficulties experienced by such children differed in any way from those classified as having a Specific Developmental Disorder of Motor Function (SDD-MF). All the children with Asperger's syndrome turned out to meet criterion for a diagnosis of motor impairment. Performance of the Asperger group was also slightly poorer on the Gesture Test. No evidence of group differences in the pattern of impairment was found. This study is consistent with others suggesting a high prevalence of clumsiness in Asperger's syndrome.

## Oral Language

Craig, J., & Baron-Cohen, S. (2000). Story-telling ability in children with autism or Asperger syndrome: A window into the imagination. *Israel Journal of Psychiatry and Related Sciences*, 37(1), 64–70.

Used a totally free story-telling method to assess if narratives produced by children with autism or Asperger Syndrome (AS) contained fewer imaginative events. This study provides experimental evidence for imaginative impairments in story-telling in children with autism spectrum conditions. These are discussed in terms of two cognitive theories: executive dysfunction and theory of mind.

Losh, M., & Capps, L. (2003). Narrative ability in high-functioning children with autism or Asperger's syndrome. *Journal of Autism and Developmental Disorders*, 33(3), 239–251.

This study examines the narrative abilities of 28 high-functioning children with autism or Asperger's Syndrome and 22 typically developing children across two different discourse contexts. As compared with the typically developing children, the high-functioning group performed relatively well in the storybook context but exhibited difficulty imbuing their narratives of personal experience with the more sophisticated characteristics typically employed by the comparison group.

## Books on Asperger Syndrome/ High Functioning Autism

Ariel, C. N., & Naseef, R. A. (2006). *Voices from the spectrum: Parents, grandparents, siblings, people with autism, and professionals share their wisdom*. London, England: Jessica Kingsley Publishers

Is a diagnosis on the autism spectrum a puzzle to be solved, or is the child with the diagnosis someone to be embraced and accepted just as she is? The editors of this collection of essays draw upon their professional and personal experiences and firmly believe that both are essential—with many lessons to be learned.

Baker, L. J., & Welkowitz, L. A. (2005). *Asperger's syndrome: Intervening in schools, clinics, and communities*. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

In recent years, a growing number of children and adults have been diagnosed with Asperger's Syndrome, and, although extremely talented in their areas of special interest, many with the diagnosis also have problems with coordination and sensory processing. Professionals and families struggle to help them function competently and make the most of their unique abilities. This book synthesizes the latest knowledge about how to do so in various contexts from early childhood on.

Ghaziuddin, M. (2005). *Mental health aspects of autism and Asperger syndrome*. London, England: Jessica Kingsley Publishers.

The aim of this book is to present an overview of the mental health aspects of autism and Asperger syndrome. It is not generally known that several types of behavioral and emotional problems occur in persons with autism spectrum disorders, of which autism and Asperger syndrome are the main categories. In fact, there is a common misperception among professionals and caregivers alike that people with these disorders do not develop additional psychiatric conditions. The purpose of this book is to dispel this myth. Although written primarily for parents and care-givers, specialists working in the field, such as psychiatrists and pediatricians, will also find it useful.

Grinker, R.R. (2007). *Unstrange minds: Remapping the world of autism*. New York: Basic Books Inc.

Written by a parent of an autistic child, this book examines the epidemic of autism throughout the world. He discusses the history of the disorder and his own experiences raising a daughter with autism.

Harland, K. (2007). *A Will of His Own: Reflections on Parenting a Child with Autism*. Philadelphia: Jessica Kingsley Publishers.

This book is a collection of essays revealing the experiences, good and bad, of raising a child with autism. It explores the first 9 years of the life of the author's son and the difficulty in helping her son navigate the world.

Howlin, P. (1998). *Children with autism and Asperger syndrome: A guide for practitioners and careers*. New York, NY: John Wiley & Sons Ltd.

The book is a practical guide to the treatment of children with autism and Asperger syndrome. The book commences with a comprehensive review of research into the nature, causes and treatment of autism and Asperger syndrome. A wide range of therapies are explored and evaluated and advice is given to parents about the issues to consider when seeking treatment for their children.

James, I. (2006). *Asperger's syndrome and high achievement: Some very remarkable people*. London, England: Jessica Kingsley Publishers

This book describes the lives and personalities of twenty of the most remarkable people of the past who may well have had Asperger's syndrome (AS). Famous in the fields of art, literature and science, among others, they illustrate vividly how highly intelligent people are able to surmount some of the problems that AS causes and achieve so much-more than might have been possible without it. From Michelangelo to Andy Warhol, from Jonathan Swift to Patricia Highsmith, from Bela Bartok to Glenn Gould, from Isaac Newton to Albert Einstein, from Philip of Spain to Thomas Jefferson, these individuals show us how much the world owes to people with Asperger's syndrome and similar conditions.

Klin, A., Volkmar, F. R., & Sparrow, S. S. (2000). *Asperger syndrome*. New York, NY: Guilford Press.

This book discusses what is currently known about Asperger syndrome (AS) and highlights promising leads in research and clinical practice. It sifts through the latest developments in theory and research, discussing key diagnostic and conceptual issues and reviewing what is known about behavioral features and neurobiology.

Leventhal-Belfer, L., & Coe, C. (2004). *Asperger's syndrome in young children: A developmental guide for parents and professionals*. London, England: Jessica Kingsley Publishers.

This book focuses on how Asperger's Syndrome (AS) presents in young children. An essential guide for parents coming to terms with their child's AS diagnosis and for the professionals who work with this age group, it is unique in answering pressing questions specific to younger children. How can parents help their child with AS to develop speech and language? What help is available at school and home? When, if at all, should a child be informed about AS?

Mesibov, G. B., Shea, V., & Adams, L. W. (2001). *Understanding Asperger syndrome and high functioning autism*. Dordrecht, Netherlands: Kluwer Academic Publishers.

Explores the high functioning group of people within the spectrum of autism disorders. This book examines the history of high functioning autism, diagnosis of the disorder, assessment, and treatment for individuals and their families. It may be a resource for both seasoned clinicians and concerned lay persons.

Molloy, H., & Vasil, L. (2004). *Asperger syndrome, adolescence, and identity: Looking beyond the label*. New York, NY: Jessica Kingsley Publishers.

This book is based on interviews with adolescents diagnosed with AS. It includes six life stories, as distinct from clinical case studies, written in collaboration with the teenagers themselves. These present an authentic look at the lives of the teenagers and how AS has shaped their growing identities.

Moyes, R. A. (2001). *Incorporating social goals in the classroom: A guide for teachers and parents of children with high-functioning autism and Asperger syndrome*. Philadelphia, PA: Jessica Kingsley Publishers.

This book provides practical, hands-on strategies to teach social skills to children with high-functioning autism and Asperger Syndrome. It includes a detailed description of the social deficits of these children as they appear in the classroom—difficulties with such things as understanding idioms, taking turns in conversation, understanding and using tone of voice and body language—and ways to address them.

Myles, B. S. (2005). *Children and youth with Asperger syndrome: Strategies for success in inclusive settings*. Thousand Oaks, CA: Corwin Press.

Students with AS suffer from similar, though milder, symptoms as students with autism. Classroom teachers who are responsible for planning for and teaching students with AS generally have not been provided the skills and knowledge to do so. Crafting and implementing education plans for students is nearly impossible without a clear understanding of the disorder, or clearly defined instructional methods and strategies. This book provides important strategies in teaching children and youth diagnosed with AS.

Newport, J., Newport, M., & Dodd, J. (2007). *Mozart and the whale: An asperger's love story*. New York, NY: Touchstone Books/Simon & Schuster.

A memoir about a couple who fell in love, fell apart, and finally overcame the pressures of fame, family, and Asperger's syndrome to build a life together.

Ozonoff, S., Dawson, G., & McPartland, J. (2002). *A parent's guide to Asperger Syndrome and high-functioning autism: How to meet the challenges and help your child thrive*. New York, NY: Guilford Press.

This book was written to help parents of children with Asperger syndrome or high-functioning autism (AS-HFA), or parents concerned about a child's unusual behaviors, interests, and difficulty relating to others. Psychologists explain how to work with the child's paradoxical combination of precocious talents and social difficulties to help him or her learn to engage more fully with the world.

Prior, M. (2003). *Learning and behavior problems in Asperger syndrome*. New York, NY: Guilford Press.

As increasing numbers of children are diagnosed with Asperger syndrome (AS) or high-functioning autism, new questions—and new opportunities—face mental health professionals and educators. While written primarily for professionals, the volume will also be of interest to many parents.

Ritvo, E. (2006). *Understanding the nature of autism and Asperger's disorder: Forty years of clinical practice and pioneering research*. Philadelphia, PA: Jessica Kingsley Publishers.

This book traces the historical development of understanding about autism and Asperger's Disorder, from the centuries of misdiagnoses and the first recognition of the characteristics of the disorders to the author's own highly-regarded methods for making a diagnosis. Drawing on case histories from forty years' of clinical practice, he explains their basic nature, what the causes are, what is different in the brain, treatments that work (and those that don't), what a child with a diagnosis might be like when he or she grows up, and what future research may hold.

Robison, J.E. (2007). *Look me in the eye: My life with Asperger's*. New York: Crowne Publishing.

This book is an account of growing up with Asperger's disorder. The author writes about his experiences from early childhood into adulthood, including the difficult and memorable times.

Romanowski Bashe, P., & Kirby, B.L. (2005). *The OASIS Guide to Asperger Syndrome: Completely Revised and Updated Advice, Support, Insight, and Inspiration*. New York: Crowne Publishers.

This is a recently updated edition of one of the most comprehensive resources on Asperger Syndrome. This book explains what we currently know about Asperger's disorder, including information from the scientific community as well as families affected by the disorder. It includes sections on how to gain access to information, support, and treatment for children. Advice on medications and suggestions for navigating the social environment are also addressed.

Rosaler, M. (2004). *Coping with asperger syndrome*. New York, NY: Rosen Publishing Group.

This book presents information about Asperger's syndrome, including theories concerning its cause, its various characteristics, and management of the condition.

Schopler, E., Mesibov, G. B., & Kunce, L. J. (1998). *Asperger syndrome or high-functioning autism?* New York, NY: Plenum Press.

This book discusses diagnostic, assessment, neuropsychological, and treatment issues and the relationship between patients with Asperger's syndrome and high functioning autism.

Szatmari, P. (2004). *A mind apart: Understanding children with autism and Asperger syndrome*. New York, NY: Guilford Press.

This book is structured as a collection of clinical tales that illustrates imaginatively the lives of children with autism and Asperger syndrome. This book is an attempt to lay out the foundations for understanding the minds of children with autism spectrum disorders (ASDs)—how they think, how they perceive things, what they can and can't do as a result. Its goal is also to change the way we "see" these children.

Wahlberg, T., Obiakor, F., Burkhardt, S., & Rotatori, A. F. (2001). *Autistic spectrum disorders: Educational and clinical interventions*. Oxford, England: Elsevier Science Ltd.

This book provides theoretical, educational and clinical perspectives on the study of children and adults with autistic spectrum disorders (ASD), which encompass the classic autistic disorder and mild variants such as Asperger syndrome and pervasive developmental disorder not otherwise specified. The perspectives are based on past and present theories of autism, educational practices over the past 30 years, and recent clinical innovations.

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